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## In or Out of Control

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## In or Out of Control:

Exploring Computational Models to Study the Role of  
Human Awareness and Control in Behavioural Choices  
*with Applications in Aviation and Energy Management Domains*

Although they may be complex, understanding of human cognitive processes is vital for many application domains to develop innovative applications. Processes involved in human awareness and control have received much interest within the research community and various approaches have been proposed to understand and explain the working mechanisms of cognitive processes in the human brain. The fundamental research question of this thesis is how we can understand and explain human awareness and control in behavioural choices through dynamic computational models. For this purpose, relatively new knowledge from the neurocognitive research area (strongly fuelled by neuro-imaging and recording techniques) and dynamic system modelling methods have been used. Furthermore, the explored dynamic cognitive models have been validated in the context of socio-technical systems in aviation and energy domains. This thesis addresses the mechanisms involved in different cognitive elements relevant to the main theme, including awareness, emotion, ownership, perception, attention, intention, desire, control in human action selection, and metaphors. In addition, for the application domains aviation and energy management are explored to integrate cognitive models into this application domain and to scrutinize the processes of such a hybrid socio-technical system.



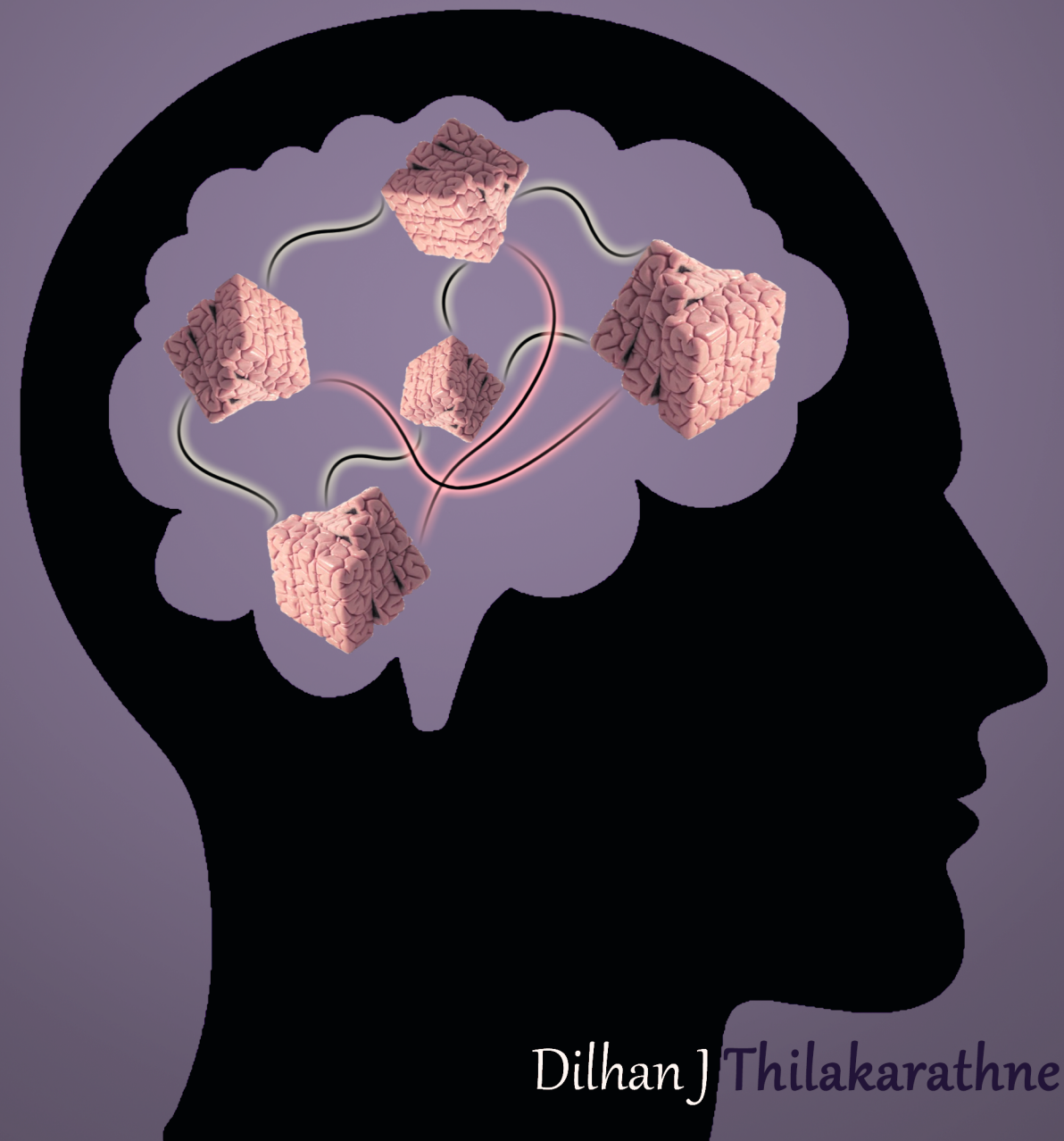
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